Technical Training Competency 1.4

Competency 1.4 **Technical training personnel shall demonstrate a working level knowledge of training course and/or program design techniques and methodologies.**

1. Supporting Knowledge and Skills

a. Define the term entry-level requirements, describe how they are established, and how they influence the training program and/or course design.

b. State the difference between terminal learning objectives and enabling learning objectives.

c. Describe the attributes of a well-written learning objective, and discuss when implied conditions and standards are sufficient.

d. Explain how learning objectives are developed and validated to ensure technical adequacy and accuracy.

e. Explain how and why learning objectives are sequenced.

f. Describe the process for grouping and sequencing objectives when developing a training course or a training program.

g. List the various training settings that may be selected when designing a training curriculum, and state the advantages and disadvantages of each one.

2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	**Site Location**	**Notes**
Department of Energy	http://wastenot.inel.gov/cted/stdguido.html	DOE Standards, Guides, and Orders
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Read Section 3.0, “Design,” of DOE-STD-1078-94, U.S. Department of Energy Standard, *Training Program Handbook: A Systematic Approach to Training.*

Read Section 2, “Design,” and Appendix A, “Instructional Methods,” of The *Occasional Trainer’s Handbook.*

EXERCISE 1.4-A Sketch the major steps taken in the design phase of training.

EXERCISE 1.4-B State the basic purpose of terminal and enabling objectives. What key elements should be found in a well-developed terminal or enabling objective?

EXERCISE 1.4-C Explain the relationship between terminal and enabling objectives.

EXERCISE 1.4-D Explain why learning objectives are sequenced. List as many processes as you can for sequencing instruction.

EXERCISE 1.4-E Develop a simple matrix listing some of the advantages and limitations for the following training settings: self-paced instruction, on-the-job training, laboratory/workshop training, and classroom instruction.

EXERCISE 1.4-F Explain why an entry-level test should be considered for both new and existing training programs.

3. Summary

Read page 31 of DOE-STD-1078-94, U.S. Department of Energy Standard, *Training Program Handbook: A Systematic Approach to Training.*

4. Exercise Solutions

EXERCISE 1.4-A Sketch the major steps taken in the design phase of training.

ANSWER 1.4-A Refer to the flow chart from *The Occasional Trainer’s Handbook*, p. 2-2.

EXERCISE 1.4-B State the basic purpose of terminal and enabling objectives.

ANSWER 1.4-B Terminal and enabling objectives should clearly communicate the performance expectations. Each objective should contain three key elements: (1) a statement of performance required on the job, (2) conditions under which the performance will take place, and (3) standards for mastery or acceptable performance.

EXERCISE 1.4-C Explain the relationship between terminal and enabling objectives.

ANSWER 1.4-C Enabling objectives are written to further separate a terminal objective into the knowledge and skills required to meet the terminal objective. Enabling objectives describe what has to be done to achieve the terminal objective. Generally, there are several enabling objectives for each terminal objective.

EXERCISE 1.4-D Explain why learning objectives are sequenced. List as many ways as you can come up with for sequencing instruction.

ANSWER 1.4-D Adults learn best when facts and concepts are built upon one another and are closely related. The sequence should allow each terminal objective to build upon and provide information necessary to support the next terminal objective. There are numerous ways to sequence instruction:

- Follow the sequence normally used on the job
- Show the whole picture; discuss each part, in turn; and then return to discuss the whole picture
- Move from known to unknown
- Discuss simple to complex
- Discuss concrete to abstract

EXERCISE 1.4-E Develop a simple matrix listing some of the advantages and limitations for the following training settings: self-paced instruction, on-the-job training, laboratory/workshop training, and classroom instruction.

ANSWER 1.4-E

Training Settings Matrix		
Setting	**Advantages**	**Limitations**
Self-paced/ self-directed instruction	• Close supervision is not required. • It is useful as an adjunct to other methods of learning. • The trainee controls the pace and flow. • The trainee can pursue an interest not shared by other trainees. • The trainee controls the number of examples and level of difficulty.	• The trainee must be self-motivated. • The goal of the learning session must be clearly stated or understood by the trainee. • Effectiveness may be based on the trainee's ability to make strategic decisions regarding instructional support.
On-the-job training (OJT)	• It is useful for developing job-specific training. • It acts as a continuation of instruction received in formal courses. • It reinforces classroom training when the job is complex.	• The job setting may not be conducive to learning (interruptions, noisy, too dangerous for trial-and-error mistakes). • Support materials such as job aids are often a necessary adjunct. • Qualified subject matter experts must be available to conduct the OJT.

Training Settings Matrix		
Setting	**Advantages**	**Limitations**
Laboratory/ workshop	• It is useful if multiple job conditions (environment, system, equipment, etc.) are required for task performance. • It permits application of course material and basic skills in a hands-on environment. • It is effective when used to train basic skills that support task performance. • It is useful when tasks, elements, and skills require hands-on practice to achieve mastery. • It is useful when OJT is impractical.	• It usually requires fewer trainees per trainer. • It may require special facilities or equipment. • It is time-consuming because trainees must be given the opportunity to practice until they reach an acceptable proficiency.
Classroom	• It works well for initial presentation of fundamental and basic theoretical knowledge. • It is suitable when large quantities of basic knowledge must be presented. • It works well when other training settings are not suitable or available. • It is useful if there are no critical resource constraints--everything required for training can be presented in a classroom setting. • It is useful if the subject matter changes frequently.	• Classroom training cannot replicate OJT experience. • Trainee involvement is limited. • It is difficult to check learning before testing. • It should not be used as a sole method when teaching job tasks. • Trainee attention may wander.

EXERCISE 1.4-F Explain why an entry-level test should be considered for both new and existing training programs.

ANSWER 1.4-F An entry-level test determines if personnel meet the entry-level requirements and serves to focus the training at the appropriate level. This can be especially helpful when evaluating an existing program since it allows comparison of the existing job incumbent training level to the desired level.